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INVENTION

# Patents of the Week

► A LIGHT AMPLIFIER that preserves the color distribution of the original image, a system that has military applications for enemy detecting devices, has been granted a patent.

Radames K. H. Gebel of Dayton, Ohio, assigned rights of patent No. 3,005,108 to the U.S. Air Force for its use without payment of royalties. The light amplifier, he said, allows examination of the distribution of individual primary colors in an image and examination of the light content both in the visible and infrared regions.

It is made of narrow strips of electroluminescent materials, which give off light when subjected to an electric current. Alternating voltages are applied to the strips, the amount of voltage being controlled by photoconductors subjected to the light of the image to be amplified.

Color in the amplified image may be produced by having the electroluminescent materials produce the primary colors directly.

Light amplifiers such as the one patented by Mr. Gebel can be used in combination with optical systems of high light-gathering ability for making observations at light levels below that which the human eye can see and at wavelengths to which the eye is insensitive.

For military use, observations of the same scene made in full color can be compared with observations made in the individual primary colors, as well as those in the infrared compared to the visible portion. In large scale, Mr. Gebel said, the device could be used to amplify projected television images.

L. C. Miller of Macedonia, Ohio, won patent No. 3,004,391 for a combined floating boat dock and walk. The dock floats at one end on the water and is connected to the shore at the other end, permitting limited movement in response to waves and tides.

This system, Mr. Miller claims, presents little or no danger of damage even in high winds. The floating dock can also be readily removed for maintenance, repair, cleaning and storage.

Truck drivers towing large semi-trailers that are attached to the cab portion by a kingpin can reduce the chances of high-jacking when the trailer is disconnected by using a device patented by William Bowler of St. Laurent, Quebec, Canada. He assigned rights of patent No. 3,004,421 to the Canadian National Railway Company, Montreal.

The device consists of a collar with a lock that fits on the kingpin of the semi-trailer so that the kingpin cannot be used to hitch the trailer to the coupling of the highjacking cab. When the collar is used on a semi-trailer, the highjackers must either remove the collar by cutting through it or provide other means for moving the trailer. Either of these operations is lengthy and greatly increases the chances of being caught, Mr. Bowler claims.

Joyce Semoneit of South Amboy, N.J., has come to the aid of music students learning to finger stringed instruments with a device to help them learn where to place their fingers to produce the desired sound, thus reducing instruction time. She was awarded patent No. 3,004,461 for the device, which consists of movable indicators, each preferably having a color spot, that show the position to be fingered on each string to produce a given tone.

• Science News Letter, 80:310 November 4, 1961

MEDICINE

## Cancer Starts When Cells Suffocate

► CANCER GETS ITS START when the individual cell starts to suffocate, evidence presented to the First International Pharmacology Meeting in Stockholm indicates.

The first test in a living animal of the idea that cancer is due to the lack of oxygen was made with mice, Dr. George T. Okita of the University of Chicago reported.

With Dr. Esmat A. Ezz, Dr. Okita experimented on mice that nearly always get mammary cancer from the mother's milk, which carries a cancer-inducing virus. At the age of one year, nearly all the young either have mammary tumors or are in a pre-tumorous state.

When some of these mice were delivered by Caesarean section, kept tumor-free by being segregated from their mothers and injected with radioactive food chemicals that are immediately burned in the cells, they were found to burn their food by the normal method. The tumor-bearing mice, however, burned their food by a more primitive or "glycolytic," method that requires less oxygen.

The food-burning method was measured by collecting the radioactive carbon dioxide exhaled by the mice.

Measurements on the one-year-old, pre-cancerous mice fell somewhere in between the measurements on the healthy and the tumorous mice. But even though there were no visible signs of cancer on the one-year olds, they were definitely headed in a cancerous direction.

• Science News Letter, 80:310 November 4, 1961

## Questions

**PUBLIC HEALTH**—How many cases of food-borne and water-borne diseases were reported in the 10-year period ending in 1960? p. 302.

**SPACE**—How many feet will there be between dipoles when scattered in space? p. 303.

**Photographs:** Cover, Lincoln Laboratory; p. 299, Picker X-Ray Corporation; p. 301, Harvard University; p. 303, Goodyear Tire & Rubber Company; p. 306, Merck, Sharp and Dohme; p. 312, Rosanna.